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Anex

Sharkoon Rebel P20 SFX 850

Lab ID#: SK85002386
Receipt Date: Feb 12, 2024
Test Date: Mar 12, 2024

Report: 24PS2386A
Report Date: Mar 14, 2024

DUT INFORMATION

Brand	Sharkoon
Manufacturer (OEM)	Sirfa
Series	Rebel P20 SFX
Model Number	Rebel P20 SFX 850
Serial Number	
DUT Notes	

DUT SPECIFICATIONS

Rated Voltage (Vrms)	100-240
Rated Current (Arms)	12-6
Rated Frequency (Hz)	50-60
Rated Power (W)	850
Type	ATX12V
Cooling	92mm Fluid Dynamic Bearing Fan (S0921512HHB)
Semi-Passive Operation	✓ (selectable)
Cable Design	Fully Modular

TEST EQUIPMENT

Electronic Loads	Chroma 63601-5 x2 Chroma 63600-2 63640-80-80 x10 63610-80-20
AC Sources	Chroma 6530, APM SP300VAC4000W-P
Power Analyzers	RS HMC8015, N4L PPA1530, N4L PPA5530
Oscilloscopes	Picoscope 4444, Rigol DS7014, Siglent SDS2104X PLUS
Sound Analyzer	Bruel & Kjaer 2270 G4
Microphone	Bruel & Kjaer Type 4955-A
Temperature Logger	Picoscope TC-08
Tachometer	UNI-T UT372
Multimeters	Keysight 34465A, Keithley 2015 - THD
UPS	FSP Champ Tower 3kVA, CyberPower OLS3000E 3kVA
Isolation Transformer	4kVA

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RESULTS

Temperature Range (°C /°F)	30-32 / 86-89.6
ErP Lot 3/6 Ready	✓
(EU) No 617/2013 Compliance	✓
ALPM (Alternative Low Power Mode) compatible	✓
ATX v3.1 PSU Power Excursion	✓

115V

Average Efficiency	89.488%
Efficiency With 10W (≤500W) or 2% (>500W)	63.075
Average Efficiency 5VSB	83.193%
Standby Power Consumption (W)	0.0756000
Average PF	0.988
Avg Noise Output	30.58 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

230V

Average Efficiency	91.230%
Average Efficiency 5VSB	82.034%
Standby Power Consumption (W)	0.1783000
Average PF	0.953
Avg Noise Output	30.65 dB(A)
Efficiency Rating (ETA)	PLATINUM
Noise Rating (LAMBDA)	Standard++

POWER SPECIFICATIONS

Rail		3.3V	5V	12V	5VSB	-12V
Max. Power	Amps	20	20	70.8	3	0.3
	Watts	100		850	15	3.6
Total Max. Power (W)		850				

HOLD-UP TIME & POWER OK SIGNAL (230V)

Hold-Up Time (ms)	19.8
AC Loss to PWR_OK Hold Up Time (ms)	13.9
PWR_OK Inactive to DC Loss Delay (ms)	5.9

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CABLES AND CONNECTORS

Modular Cables

Description	Cable Count	Connector Count (Total)	Gauge	In Cable Capacitors
ATX connector 20+4 pin (300mm)	1	1	18AWG	No
4+4 pin EPS12V (420mm)	1	1	16AWG	No
8 pin EPS12V (420mm)	1	1	16AWG	No
6+2 pin PCIe (420mm+150mm)	1	2	18AWG	No
12+4 pin PCIe (430mm) (450W)	1	1	16-24AWG	No
SATA (330mm+150mm+150mm+150mm)	2	8	18AWG	No
4-pin Molex Adapter (+155mm)	1	1	18AWG	No

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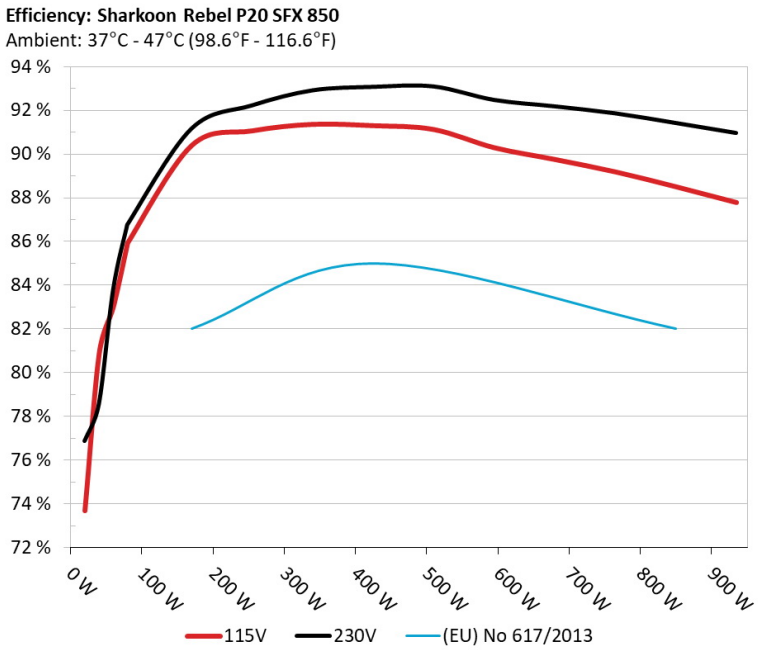
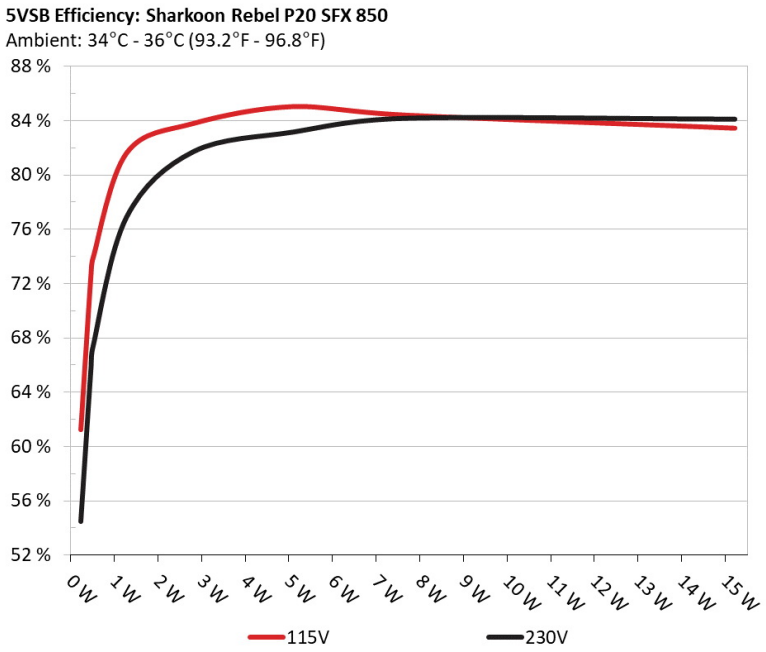
EFFICIENCY UNDER HIGH AMBIENT TEMPERATURE



INFO

The PSU`s efficiency under high ambient temperatures with 115V and 230V input. For this graph the results of the 10-110% load regulation table are used

5VSB EFFICIENCY



INFO

This graph depicts the efficiency levels of the 5VSB rail with 115V and 230V input

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5VSB EFFICIENCY -115V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	60.735%	0.034
	5.118V	0.294W		114.85V
2	0.09A	0.461W	72.118%	0.072
	5.117V	0.639W		114.85V
3	0.55A	2.81W	83.321%	0.281
	5.109V	3.373W		114.84V
4	1A	5.102W	84.567%	0.363
	5.102V	6.033W		114.84V
5	1.5A	7.641W	83.937%	0.417
	5.094V	9.104W		114.85V
6	3A	15.207W	82.97%	0.481
	5.069V	18.328W		114.83V

5VSB EFFICIENCY -230V (ERP LOT 3/6 & CEC)

Test #	5VSB	DC/AC (Watts)	Efficiency	PF/AC Volts
1	0.045A	0.23W	53.977%	0.014
	5.12V	0.427W		229.85V
2	0.09A	0.46W	65.177%	0.024
	5.116V	0.707W		229.88V
3	0.55A	2.81W	81.239%	0.11
	5.109V	3.46W		229.86V
4	1A	5.102W	82.688%	0.181
	5.102V	6.169W		229.85V
5	1.5A	7.641W	83.694%	0.241
	5.094V	9.129W		229.86V
6	3A	15.208W	83.634%	0.338
	5.069V	18.185W		229.85V

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115V

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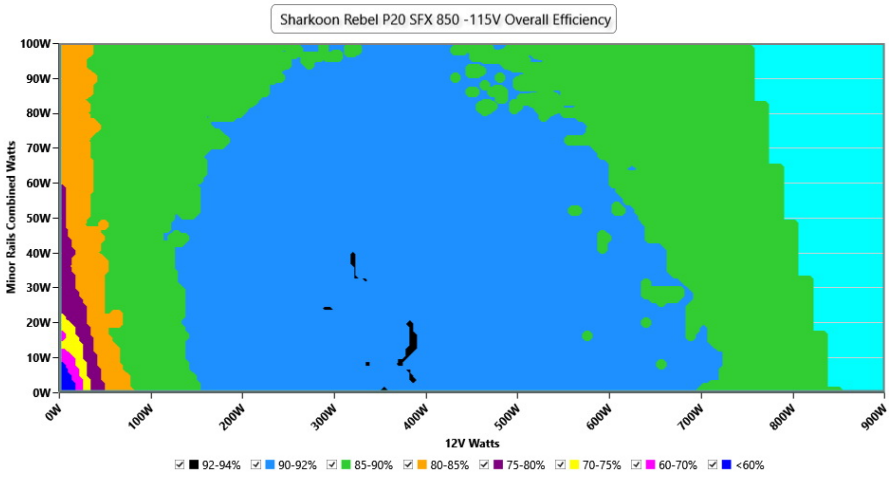
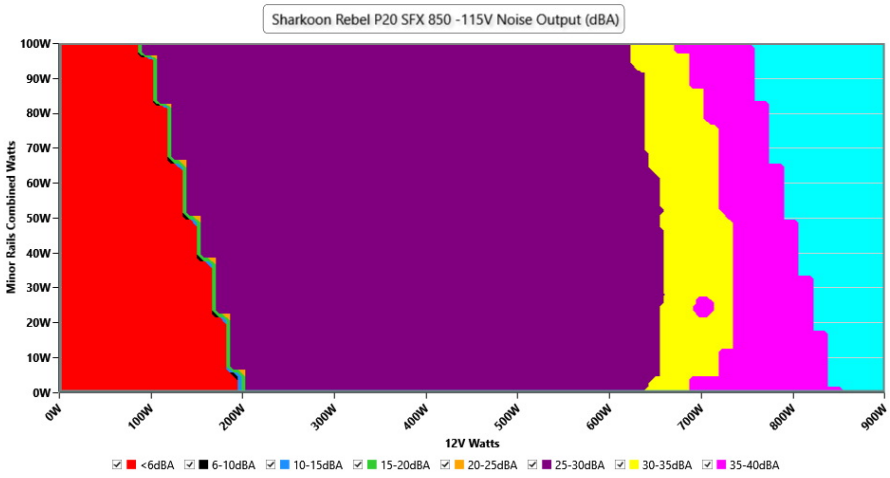
EFFICIENCY GRAPH 115V



INFO

This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

NOISE GRAPH 115V



INFO

The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -115V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	115.06 V	115.01 V	113.85 V	115.10 V	116.15 V	PASS
Mains Frequency:	60.00 Hz	59.97 Hz	59.40 Hz	60.05 Hz	60.60 Hz	PASS
Mains Voltage CF:	1.417	1.415	1.340	1.418	1.490	PASS
Mains Voltage THD:	0.14 %	0.10 %	N/A	0.21 %	2.00 %	PASS
Real Power:	0.076 W	0.012 W	N/A	0.119 W	N/A	N/A
Apparent Power:	9.009 W	8.774 W	N/A	9.262 W	N/A	N/A
Power Factor:	0.011	N/A	N/A	N/A	N/A	N/A

INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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10-110% LOAD TESTS 115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	5.168A	1.998A	1.993A	0.98A	85.003	85.949%	0	<6.0	44.39°C	0.953
	12.268V	5.006V	3.312V	5.102V	98.913				40.37°C	114.83V
20%	11.363A	2.996A	2.99A	1.178A	169.937	90.416%	0	<6.0	45.01°C	0.978
	12.236V	5.006V	3.31V	5.092V	187.949				40.7°C	114.8V
30%	17.923A	3.496A	3.49A	1.378A	254.944	91.081%	1482	28.3	41.33°C	0.991
	12.213V	5.005V	3.309V	5.081V	279.959				46.01°C	114.77V
40%	24.511A	3.996A	3.99A	1.578A	340.033	91.379%	1482	28.3	41.74°C	0.993
	12.191V	5.005V	3.308V	5.07V	372.123				46.76°C	114.75V
50%	30.752A	4.994A	4.987A	1.779A	424.85	91.317%	1483	28.3	42.09°C	0.995
	12.173V	5.006V	3.309V	5.06V	465.275				47.6°C	114.71V
60%	36.988A	6.002A	5.984A	1.981A	509.372	91.144%	1486	28.4	42.95°C	0.996
	12.154V	4.999V	3.309V	5.049V	558.841				48.96°C	114.69V
70%	43.309A	7.015A	6.987A	2.184A	594.679	90.307%	1493	28.5	43.11°C	0.996
	12.135V	4.99V	3.307V	5.038V	658.541				50.22°C	114.65V
80%	49.652A	8.032A	7.994A	2.287A	679.526	89.771%	1897	35.5	43.88°C	0.997
	12.117V	4.98V	3.302V	5.028V	756.941				51.9°C	114.62V
90%	56.415A	8.545A	8.486A	2.391A	764.958	89.198%	2556	43.4	44.22°C	0.997
	12.097V	4.973V	3.299V	5.018V	857.589				53.24°C	114.59V
100%	62.937A	9.06A	9.009A	3A	849.771	88.518%	3006	48.9	45.78°C	0.998
	12.077V	4.967V	3.297V	5V	960.027				55.87°C	114.56V
110%	69.350A	10.083A	10.11A	3.005A	934.336	87.801%	3146	49.5	46.75°C	0.997
	12.056V	4.959V	3.293V	4.992V	1064.166				57.7°C	114.53V
CL1	0.113A	12.104A	11.995A	0A	101.295	82.185%	0	<6.0	47.42°C	0.967
	12.270V	4.974V	3.31V	5.112V	123.246				41.95°C	114.82V
CL2	0.113A	20.264A	0A	0A	101.337	79.73%	0	<6.0	48.16°C	0.968
	12.277V	4.932V	3.291V	5.115V	127.074				41.08°C	114.82V
CL3	0.112A	0A	20.049A	0A	67.382	74.075%	0	<6.0	51.11°C	0.95
	12.287V	4.975V	3.292V	5.114V	90.996				42.04°C	114.83V
CL4	70.351A	0A	0A	0A	849.516	89.072%	3102	49.2	45.12°C	0.997
	12.076V	4.959V	3.291V	5.06V	953.693				56.09°C	114.56V

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20-80W LOAD TESTS 115V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.220A	0.499A	0.498A	0.195A	19.998	73.689%	0	<6.0	39.59°C	0.81
	12.176V	5.005V	3.312V	5.121V	27.153				36.56°C	114.85V
40W	2.687A	0.699A	0.697A	0.293A	39.999	80.886%	0	<6.0	40.49°C	0.906
	12.166V	5.005V	3.312V	5.118V	49.451				37.18°C	114.85V
60W	4.118A	0.899A	0.897A	0.391A	59.999	83.034%	0	<6.0	42.45°C	0.94
	12.271V	5.006V	3.312V	5.115V	72.258				38.64°C	114.85V
80W	5.568A	1.099A	1.096A	0.489A	79.94	86.037%	0	<6.0	43°C	0.95
	12.267V	5.005V	3.312V	5.111V	92.913				39.02°C	114.83V

RIPPLE MEASUREMENTS 115V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	22.91mV	15.14mV	15.08mV	9.70mV	Pass
20% Load	31.04mV	15.39mV	16.06mV	10.52mV	Pass
30% Load	25.11mV	16.22mV	18.77mV	11.49mV	Pass
40% Load	27.26mV	17.09mV	16.37mV	12.16mV	Pass
50% Load	27.62mV	17.19mV	15.75mV	11.91mV	Pass
60% Load	29.72mV	16.83mV	16.83mV	13.14mV	Pass
70% Load	27.31mV	18.32mV	16.93mV	13.08mV	Pass
80% Load	30.89mV	20.58mV	20.22mV	14.32mV	Pass
90% Load	29.26mV	17.30mV	18.57mV	14.11mV	Pass
100% Load	48.74mV	18.69mV	18.63mV	15.77mV	Pass
110% Load	48.63mV	17.66mV	19.44mV	15.96mV	Pass
Crossload1	38.52mV	16.03mV	15.39mV	20.79mV	Pass
Crossload2	26.39mV	18.78mV	16.62mV	22.32mV	Pass
Crossload3	22.96mV	17.81mV	17.55mV	21.55mV	Pass
Crossload4	47.31mV	16.86mV	16.51mV	26.14mV	Pass

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230V

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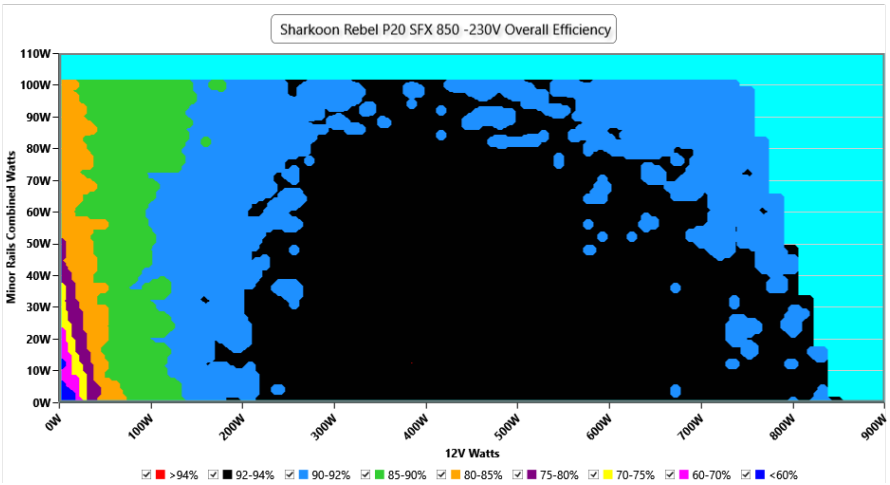
EFFICIENCY GRAPH 230V



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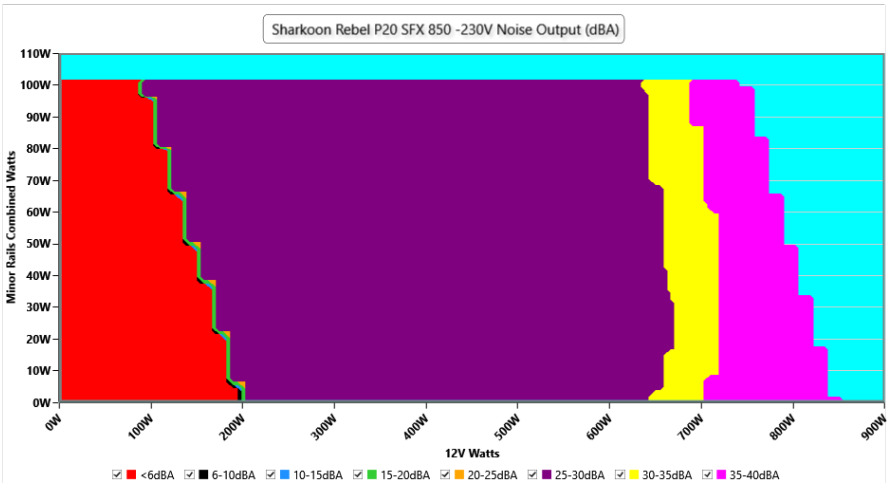
This graph depicts the PSU's efficiency throughout its entire operational range. For the generation of the efficiency and noise graphs we set our loaders to auto mode through our custom-made software before trying thousands of possible load combinations

NOISE GRAPH 230V



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The PSU's noise in its entire operational range and under 30-32 °C ambient is depicted in this graph. The X axis represents the load on the +12V rail(s) while the Y axis is the load on the minor rails

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VAMPIRE POWER -230V

Detailed Results

	Average	Min	Limit Min	Max	Limit Max	Result
Mains Voltage RMS:	231.01 V	230.91 V	227.70 V	231.07 V	232.30 V	PASS
Mains Frequency:	50.00 Hz	49.99 Hz	49.50 Hz	50.01 Hz	50.50 Hz	PASS
Mains Voltage CF:	1.417	1.416	1.340	1.419	1.490	PASS
Mains Voltage THD:	0.17 %	0.14 %	N/A	0.26 %	2.00 %	PASS
Real Power:	0.178 W	0.141 W	N/A	0.238 W	N/A	N/A
Apparent Power:	29.361 W	29.008 W	N/A	29.741 W	N/A	N/A
Power Factor:	0.007	N/A	N/A	N/A	N/A	N/A

INFO

This graph is generated by the PPA Standby Power Analysis software which takes full control of the power analyzer during the whole procedure. This application features all of the EN50564 & IEC62301 test limits for standby power software testing

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10-110% LOAD TESTS 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
10%	5.168A	1.997A	1.993A	0.98A	85.004	86.763%	0	<6.0	44.13°C	0.815
	12.268V	5.007V	3.312V	5.102V	98.007				40.06°C	229.83V
20%	11.363A	2.996A	2.99A	1.179A	169.941	91.152%	0	<6.0	45.01°C	0.924
	12.236V	5.007V	3.311V	5.092V	186.48				40.65°C	229.82V
30%	17.923A	3.496A	3.49A	1.378A	254.948	92.215%	1478	28.1	41.04°C	0.951
	12.213V	5.006V	3.309V	5.081V	276.481				45.81°C	229.8V
40%	24.510A	3.996A	3.99A	1.578A	340.035	92.906%	1477	28.1	41.72°C	0.963
	12.192V	5.006V	3.308V	5.07V	366.058				46.8°C	229.79V
50%	30.750A	4.993A	4.987A	1.779A	424.848	93.062%	1476	28.1	42.33°C	0.974
	12.174V	5.007V	3.309V	5.059V	456.492				47.86°C	229.78V
60%	36.984A	6A	5.984A	1.981A	509.368	93.083%	1479	28.2	42.82°C	0.98
	12.155V	5V	3.309V	5.048V	547.189				48.85°C	229.76V
70%	43.308A	7.012A	6.986A	2.184A	594.672	92.467%	1486	28.4	43.12°C	0.985
	12.136V	4.992V	3.307V	5.037V	643.142				50.18°C	229.75V
80%	49.651A	8.029A	7.993A	2.287A	679.522	92.174%	1893	35.4	43.78°C	0.988
	12.117V	4.982V	3.303V	5.028V	737.242				51.89°C	229.74V
90%	56.419A	8.541A	8.485A	2.391A	764.954	91.852%	2417	42.6	44.05°C	0.991
	12.096V	4.975V	3.3V	5.018V	832.853				53.09°C	229.72V
100%	62.941A	9.056A	9.008A	3A	849.768	91.411%	2831	46.7	45.12°C	0.993
	12.076V	4.969V	3.297V	5V	929.69				55.15°C	229.71V
110%	69.352A	10.079A	10.109A	3.006A	934.34	90.956%	3145	49.5	46.59°C	0.994
	12.056V	4.96V	3.294V	4.991V	1027.247				57.55°C	229.69V
CL1	0.114A	12.102A	11.992A	0A	101.299	82.968%	0	<6.0	47.05°C	0.866
	12.267V	4.975V	3.311V	5.111V	122.087				41.57°C	229.83V
CL2	0.113A	20.252A	0A	0A	101.34	80.435%	0	<6.0	48.38°C	0.877
	12.273V	4.935V	3.293V	5.114V	126.006				41.29°C	229.83V
CL3	0.113A	0A	20.041A	0A	67.384	75.031%	0	<6.0	49.71°C	0.798
	12.277V	4.979V	3.293V	5.113V	89.783				40.64°C	229.84V
CL4	70.355A	0A	0A	0A	849.516	92.021%	2836	46.8	45.33°C	0.993
	12.075V	4.962V	3.289V	5.06V	923.275				56.3°C	229.71V

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20-80W LOAD TESTS 230V

Test	12V	5V	3.3V	5VSB	DC/AC (Watts)	Efficiency	Fan Speed (RPM)	PSU Noise (dB[A])	Temps (In/Out)	PF/AC Volts
20W	1.220A	0.499A	0.498A	0.195A	19.999	76.872%	0	<6.0	39.74°C	0.447
	12.174V	5.005V	3.312V	5.119V	26.161				36.65°C	229.85V
40W	2.664A	0.699A	0.697A	0.293A	40	78.56%	0	<6.0	40.39°C	0.638
	12.273V	5.006V	3.313V	5.116V	50.917				37.09°C	229.84V
60W	4.118A	0.899A	0.897A	0.391A	60	83.777%	0	<6.0	41.98°C	0.737
	12.269V	5.006V	3.312V	5.113V	71.621				38.45°C	229.84V
80W	5.570A	1.099A	1.096A	0.489A	79.943	86.735%	0	<6.0	43.1°C	0.803
	12.266V	5.006V	3.312V	5.11V	92.165				39.23°C	229.83V

RIPPLE MEASUREMENTS 230V

Test	12V	5V	3.3V	5VSB	Pass/Fail
10% Load	23.32mV	15.45mV	14.62mV	10.78mV	Pass
20% Load	30.79mV	13.24mV	12.78mV	9.60mV	Pass
30% Load	25.57mV	15.76mV	14.62mV	10.42mV	Pass
40% Load	23.27mV	14.52mV	13.90mV	11.34mV	Pass
50% Load	25.62mV	15.55mV	15.13mV	11.39mV	Pass
60% Load	24.86mV	15.04mV	15.49mV	12.11mV	Pass
70% Load	24.96mV	15.04mV	14.83mV	12.16mV	Pass
80% Load	25.52mV	16.42mV	16.01mV	12.57mV	Pass
90% Load	27.72mV	17.96mV	18.67mV	14.57mV	Pass
100% Load	48.77mV	18.13mV	18.32mV	14.96mV	Pass
110% Load	47.18mV	17.51mV	19.75mV	15.12mV	Pass
Crossload1	41.66mV	16.18mV	15.61mV	21.09mV	Pass
Crossload2	27.05mV	19.71mV	16.16mV	21.55mV	Pass
Crossload3	22.30mV	17.29mV	16.78mV	21.19mV	Pass
Crossload4	47.38mV	16.66mV	16.15mV	25.03mV	Pass

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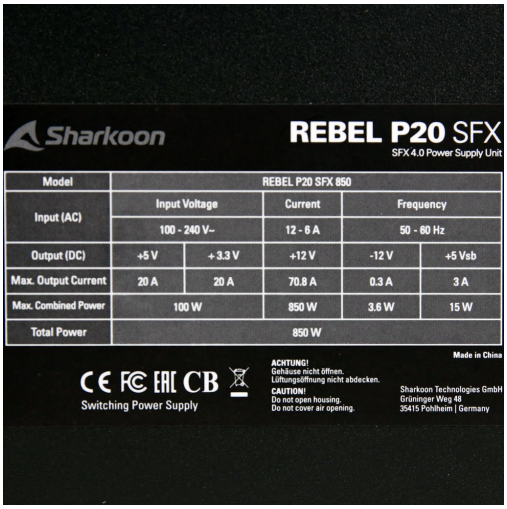
Anex

Sharkoon Rebel P20 SFX 850

Top side



Power specifications label

CERTIFICATIONS 115V

CYBENETICS PLATINUM

CYBENETICS STANDARD++

CERTIFICATIONS 230V

CYBENETICS PLATINUM 230v

CYBENETICS STANDARD++ 230v

Aristeidis Bitziopoulos
Lab Director